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Maintaining the self? Exploring the connections between students' perfectionistic profiles, self-worth contingency, and achievement goal orientations

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ABSTRACT

Two studies utilising a group-based approach examined the relationships between perfectionism and achievement goal orientations, and the role academic self-worth contingency plays in this, among university ($N = 506$, Study I) and general upper-secondary school students ($N = 154$, Study II). In both studies, four groups of students were identified based on their patterns of perfectionistic strivings and perfectionistic concerns (i.e., perfectionistic profiles) using TwoStep cluster analysis, and group differences in achievement goal orientations were examined while controlling for the effect of academic self-worth contingency. High perfectionistic concerns, with or without high perfectionistic strivings, were connected with goals reflecting relative performance and avoidance, whereas high strivings with low concerns were linked with a stronger emphasis on mastery. Students with low strivings and low concerns were, instead, inclined towards work avoidance. Academic self-worth contingency was highest among students with high concerns, and it contributed significantly to group differences on achievement- and performance-related achievement goal orientations. This suggests that self-worth maintenance might be one of the mechanisms linking perfectionism and motivation.

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1. Introduction

This study looks at two prominent approaches to motivated behaviour and achievement-related strivings: perfectionism reflects a combination of individual tendencies of setting excessively high personal standards and evaluating overly critically one's accomplishments (Stoeber & Otto, 2006), while achievement goal orientations refer to the overarching aims in achievement settings, the general orientations towards learning and studying (Kaplan & Maehr, 2007). By viewing these approaches together, we jointly explore the level of standards students set for themselves and their self-evaluations regarding the attainment of those standards, and how they are connected to the different types of goals students seek to attain.

Students' goal striving might also be influenced by processes and factors associated with the maintenance of self-worth (Crocker & Wolfe, 2001). In a school context, then, a student whose self-worth is highly

dependent on academic achievements may be prone to ego-protection, by avoiding appearing incompetent, or to ego-enhancement, by aiming to demonstrate their competence (Covington, 2000). Thus, in addition to perfectionistic tendencies, contingent self-worth may also have an important role in students' evaluation of their successes and failures and the kinds of goals they set themselves in achievement settings.

In this study, we examined the different patterns of students' perfectionistic tendencies, how those patterns predict students' achievement goal orientations, and whether students' academic self-worth contingency contributes to this association.

1.1. Perfectionism: Dimensions and profiles

Perfectionism is a multidimensional personality disposition characterised by a combination of two facets: *perfectionistic strivings*, which refer to excessively high personal standards and striving for perfection,

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and *perfectionistic concerns*, which reflect overly critical self-evaluations, concerns about making mistakes, and feelings of discrepancy between one's standards and performances (Bieling, Israeli, & Antony, 2004; Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt & Flett, 1991; Stoeber & Otto, 2006). Within this framework, the dimensional approach considers the two facets as independent dimensions of perfectionism and examines their correlates, and the group-based approach combines the two facets to form different groups of perfectionists and explores the differences and similarities between those groups on various criteria (Stoeber & Otto, 2006).

Previous research following the dimensional approach suggests perfectionistic strivings to be related to high academic achievement, self-esteem, hope of success, motivation for school, and other desirable outcomes in achievement contexts (Accordino, Accordino, & Slaney, 2000; Damian, Stoeber, Negru-Subtirica, & Băban, 2017; Stoeber & Rambow, 2007), whereas the connections of perfectionistic concerns have often been less positive, such as depressive symptoms, inferior achievement and self-esteem, and fear of failure (Accordino et al., 2000; Grzegorek, Slaney, Franze, & Rice, 2004; Stoeber & Rambow, 2007). Thus, while perfectionistic strivings seem to reflect a healthy pursuit of excellence, ongoing feelings of concerns and disappointment may undermine students' motivation, well-being, and self-worth.

Studies focusing on groups or subtypes of perfectionism have mostly followed either the tripartite (see, e.g., Rice & Ashby, 2007; Rice, Ashby, & Gilman, 2011) or the 2×2 (see, Gaudreau & Thompson, 2010) models. The tripartite model has investigated the combinations of high strivings and low concerns, high strivings and high concerns, and low strivings with either low or high concerns, while the more recent 2×2 model also distinguishes the combinations of low strivings and low concerns and low strivings and high concerns. This further division has given evidence that it is actually the low strivings and high concerns -pattern that is the most problematic, not the high strivings and concerns -pattern suggested by the tripartite model. It has been argued that the more refined division of subtypes of perfectionism might thus prove to be stronger in terms of explaining behaviour in various domains (see, e.g., Hill & Madigan, 2017).

The different patterns of perfectionistic strivings and concerns have also been linked to educationally relevant outcomes. A group characterised by high strivings and low concerns has reported relatively high academic achievement, self-esteem, and positive affect, as well as relatively low anxiety and depressive mood (Gilman & Ashby, 2003; Rice & Slaney, 2002; Wang, Slaney, & Rice, 2007). A combination of high perfectionistic tendencies has been linked with both favourable, such as efficacy beliefs and self-regulation (Sironic & Reeve, 2012; Suh, Yuen, Wang, Fu, & Trotter, 2014), and disadvantageous outcomes, such as anxiety, negative affect, and low self-esteem (Rice & Slaney, 2002; Wang et al., 2007; Wang, Permyakova, & Sheveleva, 2016). Individuals low on both dimensions have reported anxiety, social stress, and school maladjustment, and moderate achievement (Gilman & Ashby, 2003; Grzegorek et al., 2004; Rice & Slaney, 2002; Wang et al., 2007). Finally, having low strivings and high concerns appears the most disadvantageous combination of perfectionistic tendencies, as links, for example, with relatively high negative affect, anxiety, and academic dissatisfaction have been observed (Wang et al., 2007).

1.2. Perfectionism and achievement goal orientations

As there appear to be differences between students in their relative emphasis of perfectionistic strivings and perfectionistic concerns, as well as in how these emphases are linked to various psychological and academic outcomes, it seems likely that these patterns are also connected with students' goals in achievement-related contexts (Hanchon, 2011).

Achievement goal orientations represent students' tendencies to endorse certain types of goals and outcomes in achievement situations (Ames, 1992; Kaplan & Maehr, 2007; Pintrich, 2000). Initially, two

classes of goals were identified, namely mastery (i.e., increasing competence) and performance (i.e., demonstrating competence) (Dweck, 1986; Nicholls, Patashnick, & Nolen, 1985). Later, performance goals were further divided into approach and avoidance components reflecting the demonstration of competence versus the avoidance of showing incompetency, respectively (Elliot & Harackiewicz, 1996). The approach-avoidance distinction has also been applied to mastery goals (2×2 model; Elliot, 1999). Other mastery-related nuances include mastery-extrinsic (Niemivirta, 2002) or outcome goals (Grant & Dweck, 2003), which refer to the goal of wanting to do well and relying on extrinsic criteria, such as grades, as the standards for improvement and learning. The most recent model has defined goals according to the valence (i.e., positive or negative) and definition (i.e., in reference to task, self, or others) of competence to form six different achievement goals (3×2 model, Elliot, Murayama, & Pekrun, 2011). Also, some models incorporate a work-avoidance goal, which reflects the tendency to minimise effort and avoid challenges in schoolwork (Nicholls et al., 1985). Although these goals do not reflect competence-related strivings as such, they are surely present in school and reflect some students' attempts to cope with the achievement-related demands inherent in the classroom (Niemivirta, Pulkka, Tapola, & Tuominen, 2019).

An orientation towards mastery has been associated with intrinsic motivation, behavioural engagement, positive achievement emotions, and other advantageous outcomes (Church, Elliot, & Gable, 2001; Pekrun, Elliot, & Maier, 2009), whereas mastery-extrinsic orientation has been linked with both favourable and unfavourable consequences, such as achievement, commitment, and effort, as well as stress and emotional exhaustion (Tuominen-Soini, Salmela-Aro, & Niemivirta, 2008, 2011). Similarly, performance-approach orientation has been linked with both positive and negative outcomes, including commitment, participation, and achievement (Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000; Pulkka & Niemivirta, 2015; Shih, 2008), and emotional exhaustion and anxiety (Daniels et al., 2008; Tuominen-Soini et al., 2008), respectively. Performance-avoidance orientation has mostly been connected with negative achievement emotions, elevated risk of school burnout, inferior academic performance, and other disadvantageous outcomes (Pekrun et al., 2009; Tuominen-Soini et al., 2008), as has work-avoidance orientation (e.g., King & McInerney, 2014).

Regarding associations between perfectionism and achievement goal orientations, findings from the dimensional approach suggest mastery goals to be linked with perfectionistic strivings, performance-avoidance goals with perfectionistic concerns, and performance-approach with both strivings and concerns (Kim, Chen, MacCann, Karlov, & Kleitman, 2015; Stoeber, Damian, & Madigan, 2018; Wang, Fu, & Rice, 2012). This may be due to performance-approach goals encompassing both competitive and self-presentational concerns (Senko, Hulleman, & Harackiewicz, 2011), the former being potentially connected with need for achievement, and thus high standards, while the latter might reflect preoccupation with social appreciation, and thus concerns about performance. To our knowledge, no studies have so far examined connections between work-avoidance goals and perfectionistic tendencies.

Findings from the group-based approach extend the above observations. Individuals with predominantly high perfectionistic strivings seem prone to adopting mastery goals (Gucciardi, Mahoney, Jalleh, Donovan, & Parkes, 2012; Hanchon, 2010; Shih, 2013), while individuals with both high strivings and high concerns have also endorsed performance-approach and even performance-avoidance goals (Gucciardi et al., 2012; Hanchon, 2010, 2011). Individuals with low perfectionistic tendencies have mostly been found to prefer performance goals (Hanchon, 2010, 2011), or report relatively low levels on all goals (Gucciardi et al., 2012).

1.3. Perfectionism and academic self-worth contingency

Research on self-worth contingency suggests that one's self-esteem might be dependent on achievements or outcomes in certain domains, such as others' approval or outperforming others in competitive situations (Crocker & Wolfe, 2001). If perceived contingency is high, individuals are motivated to succeed in the relevant domain, as success temporarily elevates and failure declines their state self-esteem, which might then bring forth self-serving biases and defensive responses to negative outcomes (Crocker & Park, 2004). Here, we focus on academic self-worth contingency, that is, the extent to which a student's self-worth is dependent on the attainment of school-related goals (Crocker, Luhtanen, Cooper, & Bouvrette, 2003). Highly contingent students are likely to seek success and avoid failure at school in order to show their worthiness, and if success is uncertain, they tend to protect their self-esteem rather than risk failure (Crocker & Park, 2004). These students' emphasis on performance goals over mastery (Crocker & Niiya, 2012) might thus reflect self-presentational concerns at the service of self-worth maintenance (Covington, 2000).

Students' contingent self-worth might be connected with their perfectionistic tendencies, as it has been argued that a sense of self-worth dependent on the accomplishment of inflexible achievement criteria is the core of perfectionism, not striving for high personal standards per se (Hewitt & Flett, 1991). Consequently, perfectionists might measure their worth in terms of productivity and accomplishment, which may lead them to overvalue achievements and undervalue the self (Greenspon, 2000). Outperforming others in a competitive manner, a generalised sense of competence (Hill, Hall, & Appleton, 2011), and academic accomplishments (Wang et al., 2012) have been found to be sources of self-worth for individuals with high perfectionistic strivings. Thus, high academic self-worth contingency may energise achievement striving in an attempt to establish self-worth (e.g., by preferring mastery-extrinsic or performance-approach orientations), but might also lead to defensive strategies (e.g., by evoking performance-avoidance or work-avoidance orientations).

1.4. Present research

The purpose of the present research was to investigate the relationships between perfectionism and achievement goal orientations, and the role students' academic self-worth contingency might play in this. Previous studies examining the relationship between perfectionism and achievement motivation have concentrated either on the origin of different aspects of perfectionism (i.e., self vs. social; Bong, Hwang, Noh, & Kim, 2014; Damian, Stoeber, Negru, & Băban, 2014) or on their cognitive manifestations (e.g., concern over mistakes, personal standards, organisation; Fletcher, Shim, & Wang, 2012; Madjar, Voltsis, & Weinstock, 2015). Here, we focus on the multidimensional nature of perfectionism by assessing its two widely agreed dimensions, perfectionistic strivings and perfectionistic concerns (Rice, Richardson, & Tueller, 2014), and utilising the group-based approach in order to examine different patterns of perfectionistic tendencies. As this kind of person-oriented approach (Bergman, Magnusson, & El-Khoury, 2003) focuses on describing similarities and differences across individuals and groups of individuals, it might provide some added value over analysing relationships between variables.

Previous studies have mostly focused on mastery, performance-approach, and performance-avoidance goals (for review, see, Fletcher & Speirs Neumeister, 2012). In this study, we focused on a set of five orientations that represent a rather comprehensive array of goals and outcomes relevant in the classroom: mastery-intrinsic, mastery-extrinsic, performance-approach, performance-avoidance, and work-avoidance goal orientations (Niemivirta et al., 2019). Distinction into intrinsically- and extrinsically-based mastery goals seemed particularly relevant, because high perfectionistic strivings are likely associated with pursuing absolute success. Work-avoidance goals, then, seemed

meaningful, since low perfectionistic strivings might be linked with students' desire to avoid achievement situations and minimise the effort spent on studying.

As self-contingency concerns the explicit connection between one's academic accomplishments and self-esteem, and thus represents both the self-valuation processes that could be seen integral to perfectionism and the value placed on outcomes reflected in achievement goals, we would expect its inclusion in the study to add to our understanding of the dynamics between perfectionism and qualitatively different types of motivation. In terms of the design, then, we anticipated self-worth contingency to partially mediate the effects of perfectionistic tendencies on achievement goal orientations, and especially on orientations reflecting academic outcomes (i.e., absolute and relative success).

Finally, since the majority of previous research examining the relations between perfectionism and achievement motivation has focused on university and gifted students (see Fletcher & Speirs Neumeister, 2012), or have been conducted in the context of sports (for review, see Stoeber, 2011), we seek to add to current understanding by examining these relations in two academic contexts, among young adults and adolescents.

2. Study I

2.1. Aims and assumptions

The aim of Study I was to investigate how university students with different perfectionistic profiles differ with respect to their achievement goal orientations, and whether students' academic self-worth contingency contributes to these associations.

We expected to identify three to four different perfectionistic profiles, similar to those observed in previous studies: high or low on both strivings and concerns, or high on only one of them (Gaudreau, 2015; Rice et al., 2014; Wang et al., 2007). Second, we anticipated that a profile with high strivings would be associated with stronger emphasis on mastery, and on performance when combined with high concerns (Hanchon, 2010), and a profile with low strivings and concerns with an emphasis on work-avoidance.

As to the role of self-worth contingency, we expected students with high strivings and concerns to be most contingent on academic achievements, due to their assumed emphasis on relative performance and social comparison. Students with low strivings and concerns were anticipated to be least contingent on academic accomplishments. We also expected academic self-worth contingency to increase the prediction of individual differences in achievement goal orientations, but through the given mediating role, also reduce the direct influence of perfectionistic tendencies on achievement goal orientations, and particularly on those more strongly associated with self-worth maintenance (i.e., mastery-extrinsic, performance-approach, and performance-avoidance orientations), due to their explicit reference to success and failure.

2.2. Method

2.2.1. Participants and procedure

Participants were 506 Finnish university students from the fields of education, humanities, and social sciences (86% women; $M_{age} = 25.07$, $SD_{age} = 5.47$), who completed a online-questionnaire anonymously. Participation was voluntary and confidentiality was assured.

2.2.2. Measures

2.2.2.1. Perfectionism. The two facets of the Short Almost Perfect Scale (SAPS; Rice et al., 2014) were translated and the wording modified to fit the context and language: perfectionistic strivings (originally 'standards': 4 items, e.g., "I have high expectations for myself") and perfectionistic concerns (originally 'discrepancy': 4 items, e.g., "I am hardly ever satisfied with my performance"). Responses to all items were

given on a 7-point Likert-type scale ranging from 1 (not at all true) to 7 (completely true).

2.2.2.2. Achievement goal orientations. Students also responded to a questionnaire (Niemivirta, 2002) tapping five achievement goal orientations (three items each) on a response scale described above: mastery-intrinsic (e.g., “An important goal for me in my studies is to learn as much as possible”), mastery-extrinsic (e.g., “An important goal for me is to do well in my studies”), performance-approach (e.g., “An important goal for me in my studies is to do better than the other students”), performance-avoidance (e.g., “I try to avoid situations where I might fail or make mistakes”), and work-avoidance (e.g., “I try to get away with as little effort as possible in my schoolwork”).

2.2.2.3. Academic self-worth contingency. Four items based on the academic competencies section of the Contingencies of Self-Worth Scale (CSW; Crocker et al., 2003) were adopted to measure students' academic self-worth contingency, with a response scale as described above (e.g., “My self-esteem is influenced by my academic performance”).

2.2.3. Data analyses

Previous applications of the SAPS in different cultures and languages suggest that the structure might be less unambiguous than intended (Arana, Rice, & Ashby, 2018; Kira, Shuwiekh, Rice, & Ashby, 2018; Loscalzo, Rice, Giannini, & Rice, 2018), and as it has not previously been applied in the Finnish context, we used exploratory structural equation modeling (ESEM; Marsh, Morin, Parker, & Kaur, 2014) to examine the assumed structure. Since in ESEM, a hypothesised model in which the observed variables and their relations to underlying factors are not precisely specified, we tested a model in which all items loaded onto both expected factors, error terms of the items were uncorrelated, and factors were let to correlate under the oblique geomin rotation.

For achievement goal orientation and academic self-worth contingency, we used confirmatory factor analysis (CFA). For evaluating model fit, we used comparative fit index (CFI), root mean square error of approximation (RMSEA), and standardised root mean square residual (SRMR) along with the chi-square statistics (see, Hu & Bentler, 1999). Due to items being ordinal, all solutions were generated using the mean- and variance-adjusted weighted least squares (WLSMV) estimation as implemented in the Mplus Statistics Software version 8.2 (Muthén & Muthén, 1998–2017).

Regarding our research questions, students with similar patterns of perfectionistic tendencies were identified through TwoStep cluster analysis (Kent, Jensen, & Kongsted, 2014) as implemented in IBM SPSS 24. Bayesian information criterion (BIC) was used as a statistical index for choosing the best-fitting model. A series of ANOVAs was conducted next in order to examine group differences on achievement goal orientations and academic self-worth contingency, and finally, ANCOVAs were performed to control for the effect of academic self-worth contingency. Homogeneity of regressions was confirmed in all analyses, and appropriate corrections for pairwise comparisons were applied.

2.3. Results

2.3.1. Preliminary analyses

Estimation of the ESEM model for perfectionism gave an acceptable fit, although the RMSEA was rather high, $\chi^2(13) = 104.053$, $p < .001$; CFI = 0.969; RMSEA = 0.118 (90% CI = 0.097–0.139); SRMR = 0.022. The item “I often feel that not even my best performance is good enough for me - I could always do things better” loaded high on both factors, and thus did not seem to differentiate appropriately between the two dimensions. The removal of the item improved the fit to the data, $\chi^2(8) = 22.026$, $p = .0049$; CFI = 0.994; RMSEA = 0.059 (90% CI = 0.030–0.089); SRMR = 0.012. Although the remaining structure was as anticipated with statistically significant standardised factor

loadings ranging from 0.516 to 0.882, two strivings items, “I have clear and high goals (for example, in my studies)” and “I always try to do my best”, had significant negative cross-loadings onto the concerns factor, thus suggesting some overlap of these items across the two facets.

The CFA-model for achievement goal orientations yielded an acceptable fit, $\chi^2(80) = 465.659$, $p < .001$; CFI = 0.966; RMSEA = 0.098 (90% CI = 0.089–0.106); SRMR = 0.051. However, based on modification indices, the item “It is important to me that I don't fail in front of other students” of the performance-avoidance scale was allowed to cross-load onto performance-approach factor, and with this minor modification, the model improved, $\chi^2(79) = 364.269$, $p < .001$; CFI = 0.975; RMSEA = 0.084 (90% CI = 0.076–0.093); SRMR = 0.044. The model fit for self-worth contingency was excellent, $\chi^2(2) = 1.462$, $p = .4815$; CFI = 1.000; RMSEA = 0.000 (90% CI = 0.000–0.080); SRMR = 0.003.

Next, composite scores were formed based on the latent factors. Cronbach's alphas were acceptable ranging from .64 for performance-approach to .91 for mastery-intrinsic orientation (see Appendix A for descriptive statistics, correlations, and alphas).

2.3.2. Perfectionistic profiles and grouping

The results from a series of TwoStep cluster analysis showed that a five-group solution had the best fit to the data (see Table 1). However, as the change in BIC was small, and the inclusion of an additional group compared to a four-group solution did not seem to have any added descriptive value, we chose the more parsimonious four-group solution for further analyses. Group 1 (36.4% of students) reported high strivings and lowest level of concerns, group 2 (23.5%) was characterised by high strivings and concerns, group 3 (21.3%) had the lowest levels on strivings and also rather low concerns, while group 4 (18.8%) had low strivings and relatively high concerns. The groups were labelled according to the mean score profiles as *ambitious*, *perfectionists*, *non-perfectionists*, and *concerned*, respectively. Table 2 reports group differences, and Fig. 1 illustrates the profiles.

2.3.3. Group differences in achievement goal orientations and academic self-worth contingency

A series of ANOVAs showed that the groups differed significantly on all of the orientations (see Table 3). Multiple comparisons of means revealed that *ambitious* and *perfectionists* displayed highest levels of mastery-intrinsic orientation, while *non-perfectionists* and *concerned* exhibited slightly lower levels. *Ambitious* and *perfectionists* also emphasised mastery-extrinsic orientation more than the other groups, followed by *concerned* and *non-perfectionists*. *Perfectionists* scored highest on performance-approach orientation followed by *ambitious* students and *concerned*, while *non-perfectionists* reported the lowest levels. *Perfectionists* and *concerned* had relatively high scores on performance-avoidance orientation, while *ambitious* and *non-perfectionists* highlighted it the least. *Non-perfectionists* and *concerned* students scored higher on work-avoidance orientation compared to the two other groups.

The groups differed also with respect to academic self-worth contingency so that *perfectionists* were characterised by it the most, followed by *ambitious* and *concerned*, while *non-perfectionists* had the

Table 1
Information criterion values for different clustering solutions (study I).

Number of clusters	BIC	BIC change	Ratio of distance measures
1	457.985		
2	349.103	−108.882	1.479
3	283.149	−65.954	2.836
4	275.263	−7.885	1.242
5	273.539	−1.725	1.118
6	274.499	0.961	1.626

Note. BIC = Bayesian information criterion (smaller value indicates better fit).

Table 2
Mean differences in perfectionism dimensions between perfectionistic groups (study I).

Variable	Ambitious <i>n</i> = 184		Perfectionists <i>n</i> = 119		Non-perfectionists <i>n</i> = 108		Concerned <i>n</i> = 95		<i>F</i> (3, 505)	<i>p</i>	η^2
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Strivings	5.53	0.63	5.78	0.52	3.43	0.62	4.68	0.37	419.585	< .001	0.72
Concerns	2.42	0.58	4.99	0.98	3.60	1.15	4.33	0.75	243.028	< .001	0.59

Note. Range is 1–7. All groups differ from each other.

lowest scores.

ANCOVAs showed self-worth contingency to significantly predict all orientations. Although the inclusion of covariate reduced the independent effect of perfectionistic groups slightly, significant differences remained in all achievement goal orientations. As to the adjusted means, the pairwise group differences on mastery-intrinsic, performance-approach, and performance-avoidance orientations leveled off slightly, but remained the same on mastery-extrinsic and work-avoidance orientations. Even so, the contribution of academic self-worth contingency was strongest on achievement- and performance-related orientations, as well as on group differences in them (see Table 3 for means and effect sizes).

2.4. Discussion

Study I examined what kinds of perfectionistic profiles can be identified among university students, how such profiles are associated with achievement goal orientations, and whether academic self-worth contingency mediates those relationships. Four distinct profiles representing different combinations of perfectionistic tendencies were identified, namely, *ambitious*, *perfectionists*, *non-perfectionists*, and *concerned*. The profiles were linked with achievement goal orientations so that high perfectionistic strivings were associated with an emphasis on mastery tendencies, and when accompanied with perfectionistic concerns, also on relative performance. Without high strivings, concerns were related to relatively lower levels of approach tendencies and higher levels of both performance concerns and avoidance. Those with relatively lowest perfectionistic tendencies exhibited least attachment to goals other than work avoidance.

Perfectionistic groups also differed in terms of academic self-worth contingency so that it was highest among students with a combination

of high strivings and high concerns (*perfectionists*), and lowest among those with a combination of low strivings and low concerns (*non-perfectionists*). Moreover, differences in self-worth contingency further contributed to group differences on achievement goal orientations. The effects were most pronounced on orientations that explicitly reflect achievements and performance, leading to some reduction in the independent predictions of perfectionism. These findings seem to be in line with the self-worth perspective outlined earlier. That is, self-worth maintenance might be one of the mechanisms linking perfectionistic tendencies, particularly perfectionistic concerns, to goals of absolute and relative success in the academic context.

Our design did not, however, include indicators of actual academic achievement, which, naturally, would be of particular relevance when investigating achievement-related standards, concerns, and goals. After all, previous studies have shown achievement to be linked with all our constructs of interest (Chen & Wong, 2015; Crocker et al., 2003; Rice, Lopez, & Richardson, 2013; Stoeber, 2012; Tuominen-Soini et al., 2008). Thus, it would seem rather crucial to take such individual differences into account when further exploring the connections between perfectionism and achievement goals, and the role self-worth contingency plays in this. This was done in Study II.

3. Study II

3.1. Aims and assumptions

For perfectionists, performance seems to be intertwined with their sense of self. That is, perfectionists judge themselves based on their accomplishments, and as they strive towards often unrealistic standards, they rarely feel that their standards have been met. In a sense, then, both the actual accomplishments and how one perceives and

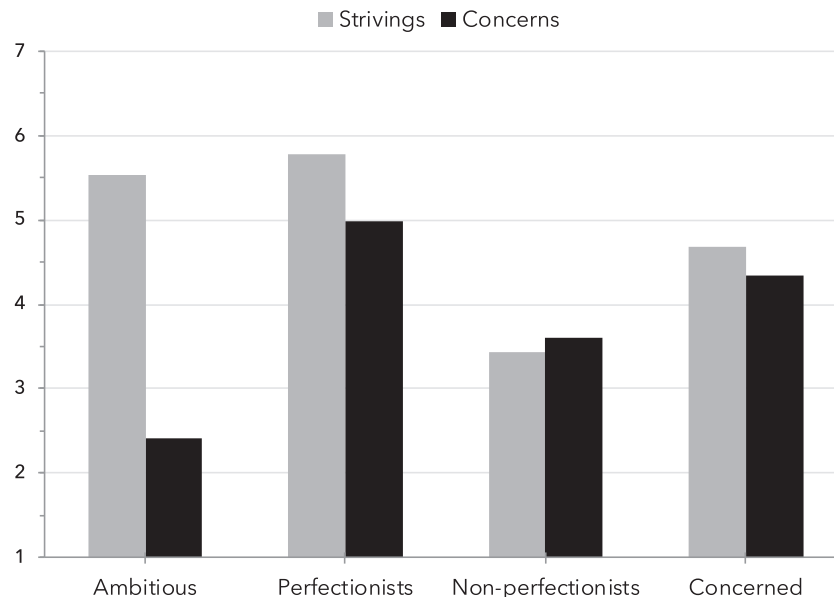


Fig. 1. Raw means for strivings and concerns for the four-group solution (study I).

Table 3

Mean differences in achievement goal orientations and academic self-worth contingency between perfectionistic groups (study I).

ANOVA												
	Ambitious <i>n</i> = 184		Perfectionists <i>n</i> = 119		Non-perfectionists <i>n</i> = 108		Concerned <i>n</i> = 95		<i>F</i> (3, 502)	<i>p</i>	η^2	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				
Mint	5.86 ^b	1.02	5.80 ^b	1.10	5.06 ^a	1.24	5.32 ^a	1.08	15.304	< .001	0.08	
Mext	5.73 ^a	0.83	5.79 ^a	0.90	4.20	0.94	4.88	0.98	85.794	< .001	0.34	
Pap ¹	4.61 ^a	1.07	5.12	0.93	3.88	1.03	4.52 ^a	0.85	30.043	< .001	0.15	
Pav	3.86 ^a	1.21	4.68 ^b	1.22	3.84 ^a	1.28	4.38 ^b	1.20	14.542	< .001	0.08	
Wa	3.38 ^b	1.29	3.63 ^b	1.45	4.39 ^a	1.29	4.27 ^a	1.30	17.770	< .001	0.10	
ASWC	4.88 ^a	1.12	5.50	1.06	4.17	1.27	4.81 ^a	1.19	25.540	< .001	0.13	

ANCOVA													
	Ambitious <i>n</i> = 184		Perfectionists <i>n</i> = 119		Non-perfectionists <i>n</i> = 108		Concerned <i>n</i> = 95		<i>F</i> (3, 502)	<i>p</i>	η^2	η^2_{adj}	Effect of ASWC
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>					
Mint	5.86 ^c	0.08	5.72 ^{bc}	0.10	5.15 ^a	0.11	5.33 ^{ab}	0.11	11.241	< .001	0.06	0.09	8.223
Mext	5.72 ^a	0.06	5.52 ^a	0.07	4.49	0.08	4.91	0.08	65.533	< .001	0.28	0.52	193.221
Pap	4.60 ^a	0.06	4.86 ^b	0.08	4.17	0.09	4.55 ^{ab}	0.09	10.645	< .001	0.06	0.34	148.658
Pav	3.85 ^b	0.08	4.42 ^{cd}	0.11	4.12 ^{abc}	0.11	4.41 ^{ad}	0.12	8.172	< .001	0.05	0.21	86.457
Wa	3.38 ^b	0.10	3.71 ^b	0.13	4.31 ^a	0.13	4.26 ^a	0.14	14.800	< .001	0.08	0.10	5.505

Note. Range is 1–7. Means with the same superscript do not differ from each other at $p < .05$. Mint = Mastery-intrinsic, Mext = Mastery-extrinsic, Pap = Performance-approach, Pav = Performance-avoidance, Wa = Work-avoidance, ASWC = Academic self-worth contingency. ¹Games-Howell correction.

values them contribute to how perfectionism manifests itself in further responses and activities. As both perfectionistic tendencies and self-worth contingency have been found to moderate individuals' reactions to achievements or achievement-related successes and failures (Crocker et al., 2003; Grzegorek et al., 2004; Stoeber & Yang, 2010), it would seem relevant in the present context to take also actual academic achievement into account.

The aims of Study II were thus twofold. First, we sought to replicate our design and test whether the findings of Study I would extend to a more heterogeneous and younger sample of upper-secondary students, and second, whether controlling for the effects of academic achievement would contribute to the findings. We therefore expected to identify similar perfectionistic profiles as in Study I, and obtain similar predictions of perfectionism and self-worth contingency on achievement goal orientations. However, we expected academic achievement to undermine the effects of self-worth contingency to some extent.

3.2. Method

3.2.1. Participants and procedure

The participants were all first-year students ($N = 154$) from one general upper-secondary school (age 16–17, girls 57%) of a middle-sized, middle-class town in Central Finland.¹ The students completed the questionnaire in the beginning of the school year. Participation was voluntary and confidentiality was assured.

3.2.2. Measures

The measures were identical to those of Study I. Additionally, students' grade point average (GPA) in their comprehensive education certificate (from the preceding year, after finishing the ninth-grade) was used as a measure of academic achievement ($M = 8.23$, $SD = 0.72$). In Finland, the GPA ranges from 4 (lowest) to 10 (highest).

¹ After a nine-year long comprehensive education, around 95% of the students in Finland continue either to general upper-secondary education, which has an academic focus, or to vocational upper-secondary education, which provides professional qualifications.

3.2.3. Data analyses

The analyses were identical to those in Study I, with the addition of including students' prior academic achievement as another covariate in the ANCOVAs.

3.3. Results

3.3.1. Preliminary analyses

Structural validity was tested as in Study I. Note, however, that here the RMSEA should be interpreted with caution, due to the small sample size and small degrees of freedom (Kenny, Kaniskan, & McCoach, 2015).

ESEM for perfectionism without modifications yielded a fair fit to the data, $\chi^2(13) = 48.558$, $p < .001$; CFI = 0.942; RMSEA = 0.133 (90% CI = 0.094–0.174); SRMR = 0.031, and after the removal of the same item as in Study I, the model resulted in slightly better fit, $\chi^2(8) = 29.064$, $p = .0003$; CFI = 0.957; RMSEA = 0.130 (90% CI = 0.081–0.183); SRMR = 0.026. The items loaded on the expected factors with statistically significant standardised factor loadings ranging from .427 to .827, with the same significant cross-loadings as in Study I (–0.339 and –0.379, respectively). Thus, the factor structure mirrored that of the one found with the university student sample.

The CFA of achievement goal orientations indicated a moderate fit to the data, $\chi^2(80) = 201.221$, $p < .001$; CFI = 0.943; RMSEA = 0.099 (90% CI = 0.082–0.116); SRMR = 0.059, and after allowing one cross-loading (again, same as in Study I), the fit improved, $\chi^2(79) = 177.147$, $p < .001$; CFI = 0.954; RMSEA = 0.090 (90% CI = 0.072–0.107); SRMR = 0.054. The model for academic self-worth contingency had a good fit, $\chi^2(2) = 7.577$, $p = .0226$; CFI = 0.995; RMSEA = 0.134 (90% CI = 0.043–0.241); SRMR = 0.015.

Correlations were in line with those of Study I, thus confirming the bivariate associations found among university students. Achievement was positively associated only with strivings and mastery-extrinsic orientation, and negatively with concerns.

3.3.2. Perfectionistic profiles and grouping

Results from the TwoStep cluster analysis indicated that a four-group solution fit the data best (Table 4). First group (18.8%) exhibited

Table 4
Information criterion values for different clustering solutions (study II).

Number of clusters	BIC	BIC change	Ratio of distance measures
1	232.636		
2	191.234	−41.402	2.010
3	180.766	−10.468	1.291
4	177.202	−3.564	1.430
5	180.763	3.561	1.189
6	186.966	6.203	1.198

Note. BIC = Bayesian information criterion (smaller value indicates better fit).

relatively the highest strivings and low concerns, second group (22.1%) displayed a combination of high strivings and concerns, third group (28.6%) had moderate strivings and relatively low concerns, and, finally, the fourth group (30.5%) was characterised by low strivings and elevated level on concerns. Based on the students' profiles (Fig. 2) and group differences (Table 5), the groups were labelled as *ambitious*, *perfectionists*, *carefree*, and *concerned*, respectively.

3.3.3. Group differences in achievement goal orientations, academic self-worth contingency, and academic achievement

A series of ANOVAs showed that the groups differed significantly on all other orientations except only marginally on work-avoidance orientation (Table 6). Multiple comparisons of means showed *ambitious* and *perfectionist* to display highest levels of mastery-intrinsic and -extrinsic orientations, followed by *concerned* and *carefree*. *Perfectionists* and *concerned* showed a relatively elevated level of performance-avoidance orientation, while *carefree* students emphasised it the least. The groups also differed significantly on academic self-worth contingency and prior academic achievement. *Perfectionists* and *ambitious* reported higher academic self-worth contingency than the others, while *ambitious* had higher academic achievement than *concerned* students.

As to ANCOVAs, self-worth contingency significantly predicted mastery-intrinsic, mastery-extrinsic, performance-approach, and performance-avoidance orientations, while, somewhat surprisingly, prior achievement had no significant effects on any orientations (Table 6). After the inclusion of the covariates, the groups still differed with respect to the four above-mentioned orientations.

Comparisons of means indicated that even after the adjustment by the covariate, group differences remained alike in both mastery orientations. In contrast, differences in performance-approach and

performance-avoidance orientations were again somewhat attenuated, thus replicating the observations of Study I. Unexpectedly, however, prior achievement did not contribute to these differences. Thus, echoing the findings of Study I, these effects point to the relevance of competence-related social comparison in perfectionistic tendencies.

3.4. Discussion

In Study II, general upper-secondary school students' perfectionistic profiles, their connections to achievement goal orientations, and the roles of academic self-worth contingency and academic achievement in these relationships were examined. As in Study I, four distinct groups were identified, and despite some differences in the overall level of strivings and concerns, three of the profiles, namely, *ambitious*, *perfectionists*, and *concerned*, were similar to those found among university students. The profile of the fourth group, *carefree*, was similar to that of *ambitious* students, but with slightly lower strivings, thus representing another rather positive or healthy patterning of perfectionistic tendencies.

As with university students, the approach goal orientations reflecting absolute and relative achievement differentiated the groups most, whereas in this case, work-avoidance orientation did not contribute to group differences. Similarly, also academic self-worth contingency was most strongly connected to goal orientations reflecting performance, and, consequently, also mediated the influence of perfectionistic profiles on those orientations. This echoes the findings of Study I, and further points to the relevance of competence-related social comparison in perfectionistic tendencies. Yet, students' actual achievement did not contribute to the observed relationships.

4. General discussion

The present research examined the patterning of perfectionistic strivings and perfectionistic concerns, how those patterns are associated with achievement goal orientations, and whether students' academic self-worth contingency contributes to those relationships among university (Study I) and general upper-secondary school (Study II) students. In line with previous studies using the SAPS (e.g., Rice et al., 2014; Wang et al., 2016), the two dimensions of perfectionism were uncorrelated in both studies, thus providing empirical grounds for a group-based approach. Following this, four groups of students with

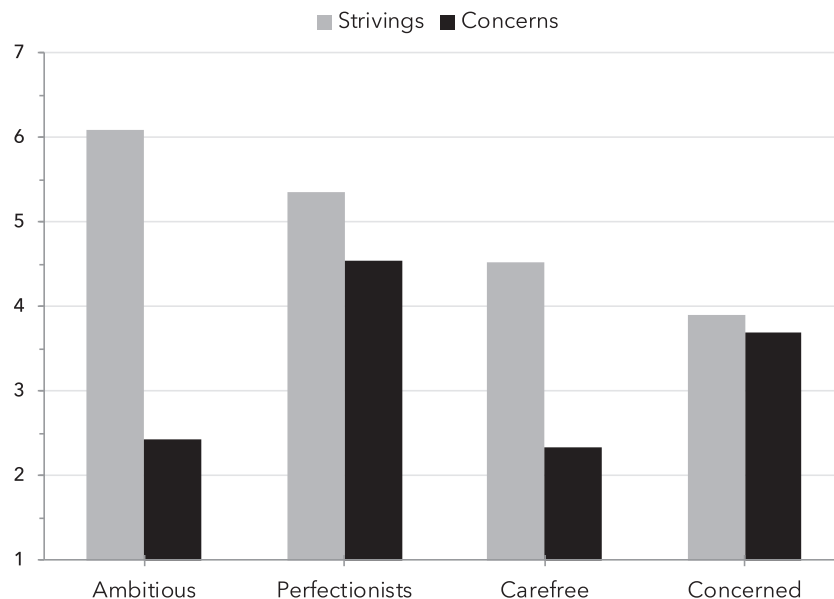


Fig. 2. Raw means for strivings and concerns for the four-group solution (study II).

Table 5
Mean differences in perfectionism dimensions between perfectionistic groups (study II).

Variable	Ambitious n = 29		Perfectionists n = 34		Carefree n = 44		Concerned n = 47		F (3, 153)	p	η^2
	M	SD	M	SD	M	SD	M	SD			
Strivings	6.09	0.48	5.36	0.70	4.53	0.63	3.89	0.79	73.828	< .001	0.60
Concerns	2.43 ^a	0.68	4.55	0.78	2.33 ^a	0.53	3.70	0.55	105.132	< .001	0.68

Note. Range is 1–7. Means with the same superscript do not differ from each other at $p < .05$.

distinct profiles were found in both studies, three of which were similar across the samples.

4.1. Perfectionistic profiles

First, a group of students characterised by high strivings and low concerns was found in both studies, and labelled as *ambitious*. A group with similar relative emphasis on the two dimensions has often been found in previous studies as well (Ashby & Gnilka, 2017; Chan, 2010; Rice & Ashby, 2007), and has commonly been referred to as healthy or adaptive perfectionists. This was the largest group among the university students (36.4%) and smallest among the upper-secondary students (18.8%). However, a group with a rather similar profile, but with less elevated level of strivings was also identified among the upper-secondary students. Since this group, labelled as *carefree*, comprised almost one third of the students (28.6%), it is reasonable to state that a majority of the upper-secondary students displayed an adaptive perfectionistic profile.

Second, a group with relatively high scores on both strivings and concerns was identified in both samples, and accordingly labelled as *perfectionists*. Over one fifth of the students displayed this profile, which in previous studies has often been labelled as unhealthy or maladaptive perfectionists (Chan, 2010; Gilman & Ashby, 2003; Grzegorek et al., 2004; Wang et al., 2016).

Third, a group of students reporting moderate strivings and, in relative terms, somewhat elevated concerns was also found in both

studies. This group, labelled as *concerned*, was the smallest among university students (18.8%) and largest among upper-secondary students (30.5%). A similar profile has also been identified in previous studies (Rice et al., 2011; Sironic & Reeve, 2012; Wang et al., 2007), although the relative emphasis of either facet has varied, along with the corresponding labelling of the group.

In some contrast to the *carefree* group among the upper-secondary students, the fourth group among university students represented a profile with relatively low strivings and concerns. In line with previous studies (Chan, 2010; Rice & Ashby, 2007; Wang et al., 2016), this group, comprising one fifth of the sample, was labelled as *non-perfectionists*.

Interestingly, all identified profiles in Study I (despite our different labelling) rather closely resemble those suggested in the 2×2 model of perfectionism (Gaudreau & Thompson, 2010), whereas in Study II, the correspondence applies to three of the profiles (*ambitious*, *perfectionist*, and *concerned*). Although a four-group solution did describe the data best also in the latter case, the fourth group (*carefree*) did not truly reflect any of those explicated in the 2×2 model. As this is unlikely due to the employed method (i.e., a person-oriented approach instead of a regression-based method, as often implemented within the 2×2 framework), we assume this to reflect the nature of the sample, that is, a somewhat selective group of Finnish general upper-secondary students. Future studies should therefore replicate the study with a more comprehensive sample, and including a comparison with vocationally-oriented students.

Table 6
Mean differences in achievement goal orientations, academic self-worth contingency, and GPA between perfectionistic groups (study II).

	ANOVA																	
	Ambitious n = 29		Perfectionists n = 34		Carefree n = 44		Concerned n = 47		F (3, 150)	p	η^2							
	M	SD	M	SD	M	SD	M	SD										
Mint	5.91	1.03	5.18 ^{ab}	1.21	4.97 ^{bc}	1.00	4.68 ^{ac}	0.99	8.540	< .001	0.15							
Mext	6.61	0.45	6.06 ^a	0.80	5.63 ^a	0.74	5.05	0.86	28.394	< .001	0.36							
Pap ¹	4.47 ^a	0.84	3.96 ^{ab}	1.27	3.27 ^c	1.07	3.41 ^{bc}	1.11	8.883	< .001	0.15							
Pav	4.13 ^{ac}	1.22	4.55 ^{ab}	1.34	3.27	1.15	4.10 ^{bc}	1.28	7.374	< .001	0.13							
Wa	3.24	1.34	3.88	1.29	3.55	1.48	4.00	1.05	2.496	.062	0.05							
ASWC	5.03 ^a	1.13	5.35 ^a	1.11	3.97 ^b	1.09	4.10 ^b	1.27	12.914	< .001	0.21							
GPA	8.61 ^{de}	0.69	8.23 ^{bce}	0.72	8.29 ^{acd}	0.75	7.92 ^{ab}	0.58	6.427	< .001	.11							
	ANCOVA																	
	Ambitious n = 29		Perfectionists n = 34		Carefree n = 44		Concerned n = 47		F (3, 148)	p	η^2	η^2_{adj}	Effect of ASWC		Effect of GPA			
	M	SE	M	SE	M	SE	M	SE					F (3, 148)	p	η^2	F (3, 148)	p	η^2
Mint	5.82	0.20	4.95 ^{ab}	0.18	5.12 ^{bc}	0.16	4.75 ^{ac}	0.15	6.148	.001	0.11	0.20	14.437	< .001	0.09	1.017	.315	0.01
Mext	6.44	0.13	5.83 ^a	0.12	5.77 ^a	0.11	5.19	0.11	16.955	< .001	0.26	0.46	32.893	< .001	0.18	0.750	.388	0.01
Pap	4.22 ^{ad}	0.19	3.57 ^{abc}	0.17	3.52 ^c	0.15	3.62 ^{bd}	0.15	3.394	.020	0.06	0.35	50.019	< .001	0.25	0.084	.772	0.00
Pav	3.96 ^{acd}	0.23	4.27 ^{ab}	0.22	3.45 ^d	0.19	4.24 ^{bc}	0.18	3.958	.009	0.07	0.19	15.572	< .001	0.10	0.006	.940	0.00
Wa	3.27	0.25	3.92	0.24	3.53	0.20	3.98	0.20	2.122	.100	0.04	0.02	0.202	.654	0.00	0.023	.879	0.00

Note. Range is 1–7. Means with the same superscript do not differ from each other at $p < .05$. Mint = Mastery-intrinsic, Mext = Mastery-extrinsic, Pap = Performance-approach, Pav = Performance-avoidance, Wa = Work-avoidance, ASWC = Academic self-worth contingency.

Related to the above, it is noteworthy that the *concerned* group, reflecting relatively elevated concerns along with moderate strivings, seems the group with the most maladaptive profile, thus confirming the “hypothesis 2” of the 2×2 model that has been under some interesting debate (Gaudreau, 2013; Stoeber, 2012). That is, a group with this profile “should relate to the most negative outcomes compared to the other subtypes of perfectionism” (Gaudreau & Thompson, 2010, p. 533). In a sense, then, our findings partially support the types of profiles hypothesised in the 2×2 model, but also raise some questions about the extent to which this might depend on age, educational context, or other demographic factors.

4.2. Perfectionistic profiles and achievement goal orientations

Students' perfectionistic profiles clearly contributed to the differences in achievement goal orientations. In relative terms, *ambitious* and *concerned* students' emphases on goals and outcomes virtually mirrored each other, although the differences among the upper-secondary students were stronger and more accentuated towards the approach type of goals. *Ambitious* students displayed a strong focus on mastery goals, while the *concerned* reported being relatively more inclined towards performance-avoidance and avoidance goals. The *perfectionists'* relative emphasis on different goals was similar in both samples, although among the university students, they did not differ from *ambitious* students on mastery-intrinsic and -extrinsic orientations. That is, compared to the upper-secondary sample, the *perfectionists* in the university sample were more strongly oriented towards mastery and success. The *carefree* students in the upper-secondary sample did not emphasise any particular goal orientation, but they displayed relatively low levels of performance-focused goals, thus supporting the interpretation of them as students with a combination of moderate mastery-related strivings with fairly low concerns about relative ability. The *non-perfectionists* in the university sample, instead, represents students with rather low levels of all goal orientations, but with a relative emphasis on performance-avoidance and work-avoidance goals.

When comparing the patterning of scores of different perfectionism groups on achievement goal orientations, we can see a strong resemblance to findings from studies investigating different types of achievement goal profiles (Pulkka & Niemivirta, 2013; Tuominen-Soini et al., 2011). Particularly the scores of *ambitious*, *perfectionists* and *non-perfectionists* bear similarity to the profiles of mastery-oriented, success- or performance-oriented, and avoidance-oriented students, respectively. In a sense, then, the findings from independent studies on achievement goal orientations validate the profiles found here, and vice versa.

To summarise, perfectionistic concerns seem to be the component differentiating between students emphasising mastery versus performance goals, whereas high perfectionistic strivings – as such or in combination with concerns – more likely differentiates students with avoidance tendencies from the others, in line with previous research and our expectations.

4.3. Role of academic self-worth contingency

One of our assumptions was that students' academic self-worth contingency might contribute to the relationships between perfectionism and achievement goal orientations, and we speculated this to reflect mechanisms of self-worth maintenance. This was supported by the highest self-worth contingency being reported by *perfectionists*, and the moderating influence of self-worth contingency being strongest on mastery-extrinsic and performance-related goal orientations. This patterning of effects was similar in both samples, although more marked among the university students, thus likely reflecting a clearer distinction between mastery and performance (i.e., increasing versus demonstrating competence) within the given educational context. These effects also held after controlling for the effect of prior grades, meaning

that the predictions of perfectionistic profiles and self-worth contingency on achievement goal orientations were independent of students' actual achievement.

These results suggest that students' academic self-worth contingency mediates the adoption of goal orientations highlighting absolute and relative success and social comparison, especially among individuals with a combination of high perfectionistic tendencies. Basing one's self-esteem on academic achievements, and orienting to achievement-related settings with a tendency to enhance and protect one's self seem to be at the service of strong concerns, while strivings alone seem more directly linked to a student's tendency either to engage in learning (mastery) or not (avoidance).

To conclude, having high perfectionistic strivings does not seem harmful or unbeneficial per se, as it is associated with goals focusing on learning and developing one's skills. Conversely, elevated levels of perfectionistic concerns, with or without high strivings, seem connected with goals emphasising performance outcomes, appearance of competence, and avoidance of errors, and may thus pose a threat to self-worth, and, consequently, to one's well-being.

4.4. Limitations and Future Directions

The present research included students from two different age groups and educational contexts, and for the most part, the results in both student groups were rather similar, thus confirming the main findings. Despite this, however, the samples represented somewhat selective student populations in the sense that both included relatively high-achieving youth. Future studies should thus expand on this and investigate also students not included in our design, such as youth oriented towards vocational studies.

The studies reported here were cross-sectional, which is another limitation. Therefore, based on the current data, we cannot say anything about the causal relationships between students' perfectionism, self-worth contingency, and motivation. However, our results revealed associations that could and should lead to more specific hypotheses on the given relationships, which could then be tested in longitudinal settings. Such designs would also inform us about stability and change over time.

As the educational context likely has an effect on these constructs and their relations, future studies should also look at the stages of transitions from one educational setting to another (e.g., from lower-secondary to upper-secondary education, or from upper-secondary to higher education). Finally, as previous studies have shown important links between students' motivation and well-being (Tuominen-Soini et al., 2008), future studies should also include explicit indicators of the latter (e.g., measures of stress and engagement). This would permit a more thorough look at further consequences of adopting certain perfectionistic profiles, and the possible mediating role of motivation.

5. Conclusions

As the consequences of students' ways of perceiving and orienting towards achievement settings reach beyond the situation at hand (i.e., they influence the quality of students' engagement and contribute to their well-being), it is important to study their possible antecedents further. This study revealed patterns of students' perfectionistic tendencies that rather systematically predicted the goals and outcomes students prefer in an academic context. Most notably, it was shown that the higher a student's perfectionistic concerns, almost irrespective of the level of perfectionistic strivings, the more the student emphasised performance-related goals. As demonstrated in previous studies, such goals may come with a cost (Daniels et al., 2008; Niemivirta, 2002; Tuominen-Soini et al., 2008). Students' academic self-worth contingency contributing significantly to the given relations suggests that the maintenance of one's self-worth might be one of the key underlying processes. Future research should thus explore such mechanisms in

more detail. The findings also align with intervention studies in which perfectionistic tendencies have been successfully reduced by distancing one's self-worth from accomplishments (Flett & Hewitt, 2014). Thus, in terms of practical implications, our results agree with suggestions that emphasise the focus on setting realistic standards, reinforcing process-related attributions, treating errors as pathways to learning, and promoting self-acceptance (Wade, 2018) – that is, by making the self less at stake.

Appendix A. Descriptive statistics, alphas, and bivariate correlations for latent variables (studies I and II)

Variable (n of items)	Study I			Study II			1	2	3	4	5	6	7	8	9
	M	SD	α	M	SD	α									
1. Strivings (4)	4.98	1.05	0.77	4.79	1.07	0.75	1	−0.13	0.48**	0.72**	0.45**	0.08	−0.24**	0.44**	0.29**
2. Concerns (3)	3.64	1.34	0.78	3.25	1.09	0.64	−0.07	1	−0.17*	−0.16	0.12	0.38**	0.29**	0.29**	−0.20*
3. Mastery-intrinsic (3)	5.58	1.14	0.91	5.12	1.13	0.86	0.38**	−0.16**	1	0.56**	0.14	−0.05	−0.35**	0.33**	0.06
4. Mastery-extrinsic (3)	5.26	1.10	0.86	5.71	0.96	0.80	0.64**	−0.09*	0.39**	1	0.37**	0.06	−0.22**	0.53**	0.19**
5. Performance-approach (3)	4.56	1.07	0.64	3.68	1.18	0.69	0.39**	0.20**	0.10*	0.49**	1	0.33**	0.06	0.57**	0.08
6. Performance-avoidance (3)	4.15	1.27	0.75	3.96	1.32	0.78	0.05	0.40**	−0.26**	0.17**	0.44**	1	0.29**	0.39**	−0.03
7. Work-avoidance (3)	3.82	1.40	0.83	3.70	1.31	0.78	−0.38**	0.19**	−0.51**	−0.43**	−0.03	0.23**	1	−0.05	−0.08
8. Academic SWC (4)	4.86	1.23	0.89	4.49	1.31	0.86	0.36**	0.24**	0.20**	0.58**	0.55**	0.42**	−0.16**	1	0.02
9. Grade point average (GPA)				8.23	0.72	–									

Note. Range is 1–7. Correlation coefficients for study I are below diagonal, and for study II above diagonal.

* $p < .05$.

** $p < .01$.

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